CLAIMS:

1. A limiting amplifier for amplifying an input signal including at least first portions having a first amplitude and second portions having a second amplitude being lower than said first amplitude, in particular digital signals comprising "one" and "zero" portions wherein the first portions are the "one" portions and the second portions are the "zero" portions, said amplifier comprising:

* a first peak detecting means for detecting the current maximum value in the input signal, said first peak detecting means comprising:

- first holding means for storing the currently detected maximum value if it is higher than the previous stored value and

- decreasing means for decreasing the stored value in said first holding means if said first amplitude is lower than said stored value, and

* a second peak detecting means for detecting the current minimum value in the input signal, said second peak detecting means comprising

- second holding means for storing the detected minimum value if it is lower than the previously stored value and

- increasing means for increasing the stored value in said second holding means if said second amplitude is higher than said stored value;

* determining means for providing

- a first decision that a variation in the input signal is due to a variation in said first amplitude and/or second amplitude, or

- a second decision that a variation in the input signal is due to a transition from a first portion to a second portion, or

- a third decision that a variation in the input signal is due to a transition from a second portion to a first portion; and

* controlling means for inactivating said decreasing means and said increasing means if said determining means provides said first decision, for activating said decreasing means if said determining means provides said second decision, or for activating said increasing means if said determining means provides said third decision.

2. The amplifier according to claim 1, wherein said first holding means comprises a first capacitor; and said decreasing means is provided for discharging said first capacitor.

3. The amplifier according to claim 2, wherein said decreasing means comprises a first current source connected in parallel to said first capacitor.

4. The amplifier according to at least any one of the preceding claims, wherein said second holding means comprises a second capacitor; and said increasing means is provided for charging said second capacitor.

5. The amplifier according to claim 4, characterized in that said increasing means comprises a second current source connected in series to said second capacitor.

6. The amplifier according to any one of the preceding claims, wherein

- a threshold generating means is provided for generating a first threshold value, a second threshold value and a third threshold value, wherein said first threshold value is higher than said second threshold value and said second threshold value is higher than said third threshold value; and

- said determining means provides said first decision if the current value of the input signal is higher than said first threshold value or lower than said third threshold value, or said second decision if the current value of the input signal is lower than said first threshold value and higher than said second threshold value, or said third decision if the current value of the input signal is lower than said second threshold value and higher than said third threshold value.

7. The amplifier according to claim 6, wherein said threshold generating means is provided for, in particular continuously, adapting the first, second and/or third threshold values in accordance with the results of said first and second peak detecting means.

8. The amplifier according to claim 6 or 7, wherein said threshold generating means is provided for generating said first threshold value V_H, said second threshold value V_0, and said third threshold value V_L as function of the value V_p stored in said first holding means and the value V_b stored in said second holding means as follows:

$$V_0 = \alpha V_b + (1-\alpha)V_p \,;\; 0 < \alpha < 1 \qquad (9)$$

$$V_H = \beta V_p \,;\; \frac{V_0}{V_p} < \beta < 1 \qquad (10)$$

$$V_L = \gamma V_b \,;\; 1 < \gamma < \frac{V_0}{V_b} \qquad (11)$$

wherein α, β and γ are constants which are chosen as function of the noise in said first and second portions of the input signal.

9. A method for amplifying an input signal including at least first portions having a first amplitude and second portions having a second amplitude being lower than said first amplitude, in particular digital signals comprising "one" and "zero" portions wherein the first portions are the "one" portions and the second portions are the "zero" portions, said method comprising the steps of

* detecting the current maximum value in the input signal wherein

- the currently detected maximum value is stored if it is higher than the previous stored value and

- said stored value is decreased if said first amplitude is lower than said stored value, and

* detecting the current minimum value in the input signal wherein

- the detected minimum value is stored if it is lower than the previously stored value and

- said stored value is increased if said second amplitude is higher than said stored value;

* providing

- a first decision that a variation in the input signal is due to a variation in said first amplitude and/or second amplitude, or

- a second decision that a variation in the input signal is due to a transition from a first portion to a second portion, or

- a third decision that a variation in the input signal is due to a transition from a second portion to a first portion; and

- inactivating said decreasing means and said increasing means if said determining means provides said first decision, activating said decreasing means if said determining means provides said second decision, or activating said increasing means if said determining means provides said third decision.

10. The method according to claim 9, comprising the further steps of

- generating a first threshold value, a second threshold value and a third threshold value, wherein said first threshold value is higher than said second threshold value and said second threshold value is higher than said third threshold value; and

- providing said first decision if the current value of the input signal is higher than said first threshold value or lower than said third threshold value, or said second decision if the current value of the input signal is lower than said first threshold value and higher than said second threshold value, or said third decision if the current value of the input signal is lower than said second threshold value and higher than said third threshold value.

11. The method according to claim 10, wherein in said threshold generating steps the first, second and/or third threshold values are, in particular continuously, adapted in accordance with the results of said detecting steps.

12. The method according to claim 10 or 11, wherein in said threshold generating steps said first threshold value V_H, said second threshold value V_0, and said third threshold value V_L are generated as function of the value V_p stored in said maximum value detecting step and the value V_b stored in said minimum value detecting step as follows:

$$V_0 = \alpha V_b + (1-\alpha)V_p;\ 0 < \alpha < 1 \tag{9}$$

$$V_H = \beta V_p;\ \frac{V_0}{V_p} < \beta < 1 \tag{10}$$

$$V_L = \gamma V_b;\ 1 < \gamma < \frac{V_0}{V_b} \tag{11}$$

wherein α, β and γ are constants which are chosen as function of the noise in said first and second portions of the input signal.